36. (**new**) The MMWH composition of claim 35, wherein the oligosaccharides are of sufficient length to inhibit fibrin-bound thrombin and fluid-phase thrombin by catalyzing antithrombin, and to inhibit thrombin generation by catalyzing factor Xa inactivation by antithrombin.

37. (**new**) The MMWH composition of claim 35, wherein said oligosaccharides are of sufficient length to bridge antithrombin or heparin cofactor II (HCII) to thrombin but do not bridge thrombin to fibrin.

38. (**new**) The MMWH composition of claim 35, wherein at least 31% of said oligosaccharides have a molecular weight greater than or equal to about 7,800.

39. (**new**) The MMWH composition of claim 35, wherein said oligosaccharides have molecular weights ranging from about 8,000 Daltons to about 10,000 Daltons.

40. (**new**) The MMWH composition of claim 38, wherein said oligosaccharides have molecular weights of about 8,500 Daltons.

41. (**new**) The MMWH composition of claim 35, wherein at least 20% of said oligosaccharides have at least one pentasaccharide sequence.

42. (**new**) The MMWH composition of claim 41, wherein at least 30% of said oligosaccharides have at least one pentasaccharide sequence.

43. (**new**) The MMWH composition of claim 42, wherein at least 35% of said oligosaccharides have at least one pentasaccharide sequence.

44. (**new**) The MMWH composition of claim 43, wherein at least 40% of said oligosaccharides have at least one pentasaccharide sequence.

45. (**new**) The MMWH composition of claim 35, wherein said MMWH composition has an anti-factor IIa activity of about 40 U/mg to about 100 U/mg, and an anti-factor Xa activity of about 90 U/mg to about 150 U/mg.

46. (**new**) The MMWH composition of claim 45, wherein said MMWH composition has an anti-factor IIa activity of about 60 U/mg to about 75 U/mg, and an anti-factor Xa activity of about 100 U/mg to about 125 U/mg.

47. (**new**) The MMWH composition of claim 35, wherein said oligosaccharides have a polydispersity of 1.1 to 1.5.

48. (**new**) The MMWH composition of claim 47, wherein said oligosaccharides have a polydispersity of 1.2 to 1.4.

49. (**new**) The MMWH composition of claim 35, wherein said MMWH composition has anti-factor Xa activity and anti-factor IIa activity and wherein the ratio of anti-factor Xa activity to anti-factor IIa activity is from about 2:1 to about 1:1.

50. (**new**) The MMWH composition of claim 35 comprising a mixture of oligosaccharides derived from heparin having antithrombin and HCII related anticoagulant activity; having sufficient length to bridge antithrombin or HCII to thrombin, but do not bridge thrombin to fibrin; having at least 20%, 25%, 30%, 35%, or 40% oligosaccharides with at least one or more pentasaccharide sequence; and being enriched for oligosaccharides having a molecular weight range from about 8,000 to 10,000 Daltons.

51. (**new**) The MMWH composition of claim 35 comprising a mixture of oligosaccharides derived from heparin having sufficient length to bridge antithrombin or HCII to thrombin, but do not bridge thrombin to fibrin; having at least 20%, 25%, 30%, 35%, or 40% oligosaccharides with at least one or more pentasaccharide sequence; having a mean molecular weight of about 8,000 to 9,800 Daltons; and having a polydispersity of about 1.1 to about 1.5.

52. (**new**) The MMWH composition of claim ~~35 co~~mprising a mixture of oligosaccharides derived from heparin having sufficient length to bridge antithrombin or HCII to thrombin, but do not bridge thrombin to fibrin; having at least 20%, 25%, 30%, 35%, or 40% oligosaccharides with at least one or more pentasaccharide sequence; being enriched for oligosaccharides having a molecular weight range from about 8,000 to 10,000 Daltons; having a mean molecular weight of about 8,000 to 9,800 Daltons; and having similar anti-factor Xa and anti-factor IIa activities wherein the ratio of anti-factor Xa activity to anti-factor IIa activity is from about 2:1 to about 1:1.

53. (**new**) The MMWH composition of claim 50 comprising a mixture of oligosaccharides derived from heparin having a polydispersity of about 1.1 to about 1.5.

54. (**new**) A MMWH composition comprising a mixture of oligosaccharides derived from heparin having sufficient length to bridge antithrombin or HCII to thrombin, but do not bridge thrombin to fibrin; having a mean molecular weight of about 8,000 to 9,800 Daltons; having a polydispersity of about 1.1 to about 1.5; having an anti-factor Xa activity from about 80 IU/mg to

about 105 IU/mg; and having an anti-factor IIa activity from about 20 IU/mg to about 150 IU/mg.

55. (**new**) The MMWH composition of claim 54 comprising a mixture of oligosaccharides derived from heparin wherein at least 30%, 35%, 40%, 45%, or 50% of said oligosaccharides have a molecular weight greater than or equal to 8,000 Daltons.

56. (**new**) The MMWH composition of claim 53 comprising a mixture of oligosaccharides derived from heparin wherein at least 30%, 35%, 40%, 45%, or 50% of said oligosaccharides have a molecular weight greater than or equal to 8,000 Daltons; having similar anti-factor Xa and anti-factor IIa activities wherein the ratio of anti-factor Xa activity to anti-factor IIa activity is from about 2:1 to about 1:1; having an anti-factor Xa activity from about 80 IU/mg to about 105 IU/mg; and having an anti-factor IIa activity from about 20 IU/mg to about 150 IU/mg.

57. (**new**) A method of treating a thrombotic condition in a subject comprising administering to said subject a pharmacologically acceptable dose of the MMWH composition of claim 35.

58. (**new**) The method of claim 57, wherein said thrombotic condition is arterial thrombosis, coronary artery thrombosis, venous thrombosis, or pulmonary embolism.

59. (**new**) The method of claim 57, wherein said MMWH composition is administered by injection.

60. (**new**) A method of preventing the formation of a thrombus in a subject at risk of developing thrombosis comprising administering to said subject a

pharmacologically acceptable dose of the MMWH composition of claim 35.

61. (**new**) The method of claim 60, wherein said subject is at increased risk of developing thrombosis due to a medical condition which disrupts hemostasis.

62. (**new**) The method of claim 61, wherein the medical condition is coroanary artery disease, or atherosclerosis.

63. (**new**) The method of claim 60, wherein said subject is at increased risk of developing thrombosis due to a medical procedure.

64. (**new**) The method of claim 63, wherein the medical procedure is cardiac surgery, cardipulmonary bypass, catheterization, or atherectomy.

65. (**new**) The method of claim 64, wherein the catheterization is cardiac catherterization.

66. (**new**) A method of inhibiting thrombus formation in a patient comprising the step of administering to the patient a pharmacologically acceptable dose of the MMWH composition of claim 35.

67. (**new**) A composition comprising the MMWH composition of claim 35 and a pharmaceutically acceptable carrier.

68. (**new**) A method of treating deep vein thrombosis in a patient comprising administering to said patient undergoing orthopedic surgery a therapeutically effective amount of the MMWH composition of claim 35.